

Overview of ARB Activity Since Last IDRAC Meeting

International Diesel Retrofit Advisory Committee
October 5, 2004

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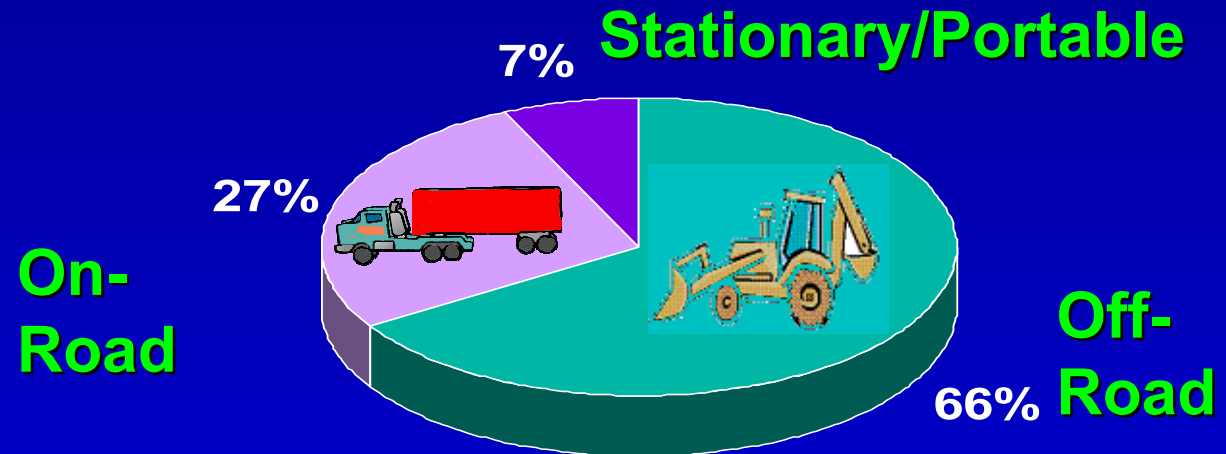
Air Resources Board

Outline

- Diesel PM Problem in California
- Diesel Risk Reduction Plan
- IDRAC Background
- ARB Adopted and Future Diesel Control Measures
- ARB Diesel Control Device Verifications
- Nitrogen Dioxide (NO₂)

California's Diesel PM Problem

- Increases Cancer Risk, Hospital Admissions & Premature Deaths
 - ◆ ~2,000-2,500 annual premature deaths
 - ◆ ~3,600 annual hospital admissions for pneumonia, CV disease, asthma, bronchitis
- Diesel PM Emissions





California Diesel Risk Reduction Plan

■ Goals adopted 2000

- ◆ Reducing emissions from virtually all diesel-fueled engines in California
- ◆ 75% reduction in diesel PM by 2010
- ◆ 85% reduction in diesel PM by 2020

■ Four-pronged approach

- ◆ New engine standards
- ◆ Cleaner diesel fuel - <15 ppm S
- ◆ Retrofit of existing engines
- ◆ Ensure in-use emissions maintained

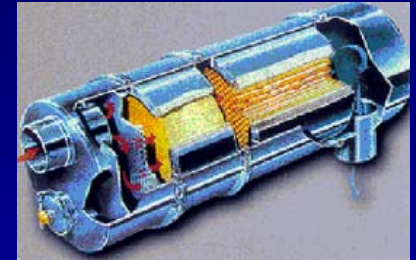
History of IDRAC

- Formed in 2000
- 7th Meeting Since November 2000
- Mission:
 - ◆ Assist ARB in achieving its goal of reducing emissions from existing diesel vehicles and equipment to near zero in the shortest time possible.
- Worldwide Membership



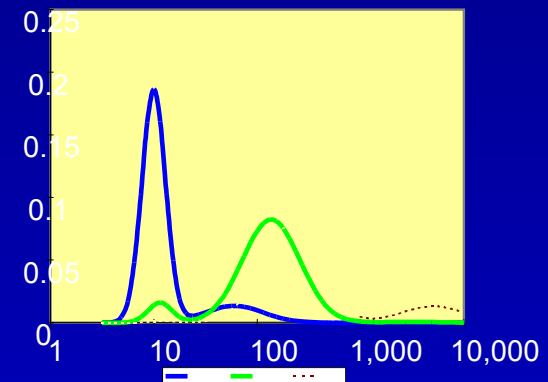
Summary of Last IDRAC Agenda, October 2003

- NO₂ Impacts with Retrofits



- Particle Number Count Standard for PM

- Retrofit Warranties



ARB Accomplishments in Diesel PM Reduction

- **Diesel control measures adopted thru 10/03**
 - ◆ **Transit agency fleet rule (2/00)**
 - ◆ **School bus idling (12/02)**
 - ◆ **Airport Ground Support Equipment Memorandum of Understanding (12/02)**
 - ◆ **Solid waste collection vehicles (9/03)**

ARB Accomplishments in Diesel PM Reduction Cont'd

- **Diesel control measures adopted since last IDRAC**
 - ◆ **Stationary CI engines (2/04)**
 - ◆ **Portable engines (2/04)**
 - ◆ **Transport Refrigeration Units (2/04)**
 - ◆ **Commercial vehicle idling (7/04)**
- **Amended Retrofit Verification Procedures (2/04)**

ARB Accomplishments in Diesel PM Reduction Cont'd

- Memorandum of Agreement with the US EPA to coordinate diesel retrofit verification (6/04)
 - ◆ ARB/US EPA reciprocity
 - ◆ Expedite and streamline process



Schedule for Future Diesel PM Regulations

■ 2004

- ◆ **Intrastate Locomotive/Commercial Harbor Craft Fuel**

■ 2005

- ◆ **Transit Fleet Vehicles (Non Urban Buses)**
- ◆ **Public On Road and Private Utilities**
- ◆ **Cargo Handling Equipment (Ports and Intermodal Facilities)**
- ◆ **Harbor Craft**

Schedule for Future Diesel PM Regulations Cont'd

■ 2005 Continued

- ◆ Ship Auxiliary Engines**
- ◆ Stationary Agricultural Engines**

■ 2006

- ◆ Private On-Road Trucks**
- ◆ Public and Private Off-Road Equipment**

■ 2007+

- ◆ Agricultural Off-Road Equipment**

Current Verifications

■ Level 3 ($\geq 85\%$ ↓ or ≤ 0.01 g/bhp-hr):

- Cleaire Flash & Catch CRT/DPX (25% NOx ↓)
- Cleaire Longview DPF + Lean NOx (25% NOx ↓)
- Clean Air Partners DPF
- CleanAIR Systems DPF
- Donaldson DPF *
- Johnson Matthey CRT DPF
- Lubrizol ECS Purifilter DPF*

** - verified since
last IDRAC,
10/03*

■ Level 2 ($> 50\%$ ↓)

- Environmental Solutions
- Lubrizol Purinox *
- Worldwide Flow Thru Filter *

Current Verifications Cont'd

■ Level 1 ($\geq 25\% \downarrow$):

- Cleaire Flash and Match (**25% NOx \downarrow**)
- Donaldson DOC *
- Donaldson DOC + Spiracle *
- Lubrizol ECS AZ Purifier & Purimuffler

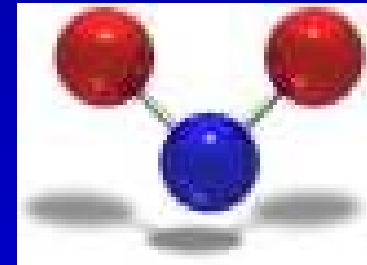
■ For further info, see

<http://www.arb.ca.gov/diesel/verdev/verdev.htm>

*** - *verified or verification expanded since last IDRAC, 10/03***

NO₂ from Diesel Retrofits

- **Verification Procedure NO₂ Limit**
 - ◆ 20% of total baseline NO_x
 - ◆ Originally effective Jan 1, 2004
- **Questions Prompted Reevaluation**
 - ◆ Engines with baseline > 20% NO₂
 - ◆ Variability of NO₂ emissions
- **Delayed Effective Date to Jan 1, 2007**
- **Formed NO₂ Working Group -**
 - 2 subgroups:
 - ◆ Modeling and Exposure
 - ◆ Regulatory Options



NO₂ Working Group

Modeling and Exposure Subgroup

- **Focused on Near-Field, Direct Exposure to NO₂ from Retrofits**
- **Topics Under Discussion**
 - ◆ **Potential Scenarios of Concern**
 - ◆ **NO₂ Emission Behavior of Different DPFs**
- **First Perform Screening Analysis**

NO₂ Working Group

Regulatory Options Subgroup

- **Evaluating Regulatory Options to Control NO₂ Emissions from Retrofits**
- **Topics Under Discussion**
 - ◆ **Structure of the Limit**
 - ◆ **Test Procedure**

ARB Diesel Contacts

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- Stationary Source Regulations and Verification: Dan Donohoue, ddonohou@arb.ca.gov, (916) 327-6023
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- Fuel Regulations and Verification: Dean Simeroth, dsimerot@arb.ca.gov, (916) 322-6020